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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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John G. Speer

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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

08/14/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/526,840	Applicant(s) SPEER ET AL.	
	Examiner JIE YANG	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim 1 and specification have been amended; claim 6 is cancelled, and claims 1-5, 7, and 8 are pending.

Specification

The amendment filed 4/24/2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The amended M_s temperatures: "445°C" and "222°C" on page 6, line 11 are not disclosed in the original application.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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In the instant case, the equation in the instant claim 1 is recognized as new matter because it is not disclosed in the original application and it can't directly be obtained from the combination of the Eqs 1- 6 as disclosed in the instant invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the instant case, the newly added limitation of having a significantly silicon level is not defined because the applicant did not provide a standard for the “significantly silicon level”, and one of ordinary skill in the art would not be reasonable apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, and 8 are rejected under 35 U.S.C. 102(b) as anticipated by Osamu Kawano et al (U.S 6,319,338, thereafter US'338).

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Regarding claim 1, US'338 discloses a high-strength hot rolled and high strength cold rolled steel sheet during dynamic deformation. (Col.1, Line 7-13 of US'338).

Regarding the limitation of "providing a steel alloy"; and "...annealing said steel alloy at an annealing temperature to produce austenite in said steel alloy." in the instant claim, US'338 teaches the cold-rolled steel sheets are subjected to annealing. The annealing temperature is from $0.1 \times (A_{c3} - A_{c1}) + A_{c1}^{\circ}\text{C}$ to $A_{c3} + 50^{\circ}\text{C}$, and the choice of annealing temperature and time ensure a uniform temperature and an appropriate amount of austenite for the steel sheets (Col.13, line 50 to Col.14, Line 15). As A_{c3} is austenite transforming temperature, keep steel at a temperature higher than A_{c3} , single phase, austenite, will be formed. Regarding the limitation of "quenching, ... at least a portion of said austenite into martensite" as recited in instant claim, US'338 teaches rapid cooling at a cooling rate from $10^{\circ}\text{C}/\text{sec}$ to $200^{\circ}\text{C}/\text{sec}$ to reach 150°C to 450°C , a portion of said austenite into martensite (Col. 14, Line 33-44), for example, most test steel samples (#16-40 in table 6 and 7 of US'338), quenching temperature is from $200-350^{\circ}\text{C}$ and martensite is form 1.3% to 4.2%. Regarding the limitation of "carbon partitioning step" as recited in instant claim, US'338 teaches: "... to obtain the necessary amount of retained austenite; the holding time

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range was from 15sec to 20 min. The holding at 150 °C to 500 °C..." (Col.14, Line 45 to Col.15, Line 12; Claim 9 of US'338); US'338 also teaches at such temperature, a portion thereof is preferably transformed to bainite to further increase the carbon concentration in the austenite; and for more than 20min. precipitation of iron carbides or pearlite transformation will result after bainite transformation (Col.14, Line 45 to Col.15, Line 12 of US'338). Compared experimental samples of US'338 (Table 5-8) with test sample recited in instant invention (Fig. 3, and Page 8, Line 3-9), US'338 teaches the similar annealing temperature (780-800 °C for #16-40 of US'338), the similar quenching temperature (200-400°C for #16-40 of US'338), and the similar partitioning temperature (300-400 °C for #16-40 of US'338) as recited in the instant invention. Therefore, it will inherently lead to a similar microstructure (MPEP 2112 IV). Actually US'338 shows carbon concentration of retained austenite after heat treatment changed from original carbon composition 0.02-0.35 (table 5 of US'338) to 1.03-1.42% wt. (Table 8 of US'338). Regarding the "cooling step", US'338 teaches in claim 9: "cooling the strip to room temperature." General heating treatment steps can also refer to Fig.7 of US'338.

Regarding the limitation of quenching, followed said step of annealing, to transform a portion of said initial austenite

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into martensite and to leave remaining austenite that is less than said initial austenite in the instant claim 1, US'338 teaches quenching between 150°C to 450°C, partial of martensite are formed (Col.14, lines 33-44 of US'338), which reads on the limitation of transforming a portion of said initial austenite into martensite and to leave remaining austenite that is less than said initial austenite initial austenite as recited in the instant claim. Regarding the newly amended limitation of carbon partitioning to transfer carbon from said martensite to said remaining austenite sufficient to produce stable or metastable retained austenite and carbon-depleted martensite, US'338 teaches "carbon partitioning step", for example, "... to obtain the necessary amount of retained austenite; the holding time range was from 15sec to 20 min. The holding at 150°C to 500°C..." (Col.14, Line 45 to Col.15, Line 12; Claim 9 of US'338). US'338 teaches the similar annealing temperature (780-800°C for #16-40 of US'338), and the similar quenching temperature (200-400°C for #16-40 of US'338) to heat treat the similar steel alloy as recited in the instant invention. Therefore, it would inherently lead to the similar microstructure (MPEP 2112 IV), which includes transferring carbon from said martensite to said remaining austenite to produce stable or metastable retained austenite and carbon-depleted martensite as recited in the

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instant claim. Regarding the term of "sufficient", US'338 teaches "carbon partitioning step", for example, "... to obtain the necessary amount of retained austenite; the holding time range was from 15sec to 20 min. The holding at 150°C to 500°C..." (Col.14, Line 45 to Col.15, Line 12; Claim 9 of US'338), which reads on the limitation of "sufficient" to produce stable or metastable retained austenite and carbon-depleted martensite as recited in the instant claim.

Regarding the equation in the instant claim, the parameters QT and M_s depend on the alloy's composition and the desired microstructure. As discussed above, US'338 teaches the similar annealing temperature, the similar quenching temperature to heat treat the similar low carbon steel alloy as recited in the instant invention. It is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the selection of the proportions of elements: Ni, Si, V, Mo, W, Mn, Cr, from US'338 in order to meet the claimed equation would appear to require no more than routine

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investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

Concluding the above discussions, all the limitations recited in instant claim 1 are anticipated by US'338.

Regarding claim 2, US'338 teaches the steel comprising 0.03 to 0.3 mass% of C. This range covers the C wt.% range of sample (0.19C – Page 8, Line 3 of instant application) recited in instant invention. It meets the limitation of a low carbon steel alloy as recited in the instant claim.

Regard to claim 3, US'338 teaches the annealing temperature is form $0.1 \times (A_{c3} - A_{c1}) + A_{c1}^{\circ}\text{C}$ to $A_{c3} + 50^{\circ}\text{C}$. Therefore, Austenite phase will be formed.

Regarding claim 4, US'338 teaches: "...followed by cooling to a primary cooling stop temperature T_q in the range of $550-720^{\circ}\text{C}$ (between A_{c3} to A_{c1})" (col.13, Line 50-66); A_{c3} is a fully austenite temperature.

Regarding claim 5, US'338 teaches cooling the heated steel at a cooling rate from $10^{\circ}\text{C}/\text{sec}$ to $200^{\circ}\text{C}/\text{sec}$ to reach 150°C to 450°C . At lower than 150°C , virtually all of the remaining austenite remaining untransformed is transformed to martensite. Between 150°C to 450°C , partial of martensite are formed. This means the temperature chosen above lower than temperature of

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martensite forming, for example, most test steel samples (#16-40 in table 6 and 7 of US'338), quenching temperature is from 200-350°C and martensite is from 1.3% to 4.2%.

Regarding claims 7, and 8, US'338 teaches at temperature of 150-500°C, for more than 20min. precipitation of iron carbides or pearlite transformation will result after bainite transformation (Col.14, Line 45 to Col.15, Line 12). US'338 shows carbon concentration of retained austenite after heat treatment changed to 1.03-1.42% wt. (Table 8 of US'338; and original carbon composition is 0.02-0.35 refer to table 5). Carbon mobility is necessary for the precipitation of carbides. Therefore, claims 7 and 8 are anticipated by US'338.

Response to Arguments

Applicant's arguments filed on 09/10/2008 with respect to claims 1-5, 7, and 8 have been fully considered but they are not persuasive.

Applicant argues Kawano et al (US'338) does not envision control of the martensitic and austenitic transformations disclosed in applicant's specification. In response, the Examiner disagrees with the Applicant's argument because US'338 teaches cooling the heated steel at a cooling rate from 10°C/sec to 200°C/sec and holding at 150°C to 450°C. At lower than 150°C, virtually all of the remaining austenite remaining untransformed is transformed to martensite. By quenching between 150°C to 450°C, partial of martensite are formed (Col.14, lines 33-44 of US'338). US'338 teaches

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“carbon partitioning step”, for example, “... to obtain the necessary amount of retained austenite; the holding time range was from 15sec to 20 min. The holding at 150°C to 500°C...” (Col.14, Line 45 to Col.15, Line 12; Claim 9 of US'338), which is a similar carbon participation condition as recited in the instant invention (Page 8, last paragraph of the instant specification), the carbon from said martensite will inherently transfer to austenite and lead to produce stable or metastable retained austenite and carbon-depleted martensite. MPEP 2112 IV.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884.

The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/

Supervisory Patent Examiner, Art Unit 1793